REMARKS

Claims 1-22 are pending and rejected in this application. Claims 1, 12 and 20 are amended hereby.

Responsive to the rejection of claims 1-6, 8, 9 and 22 under 35 U.S.C. § 102(b) as being anticipated by or in the alternative under 35 U.S.C. § 103(a) as being obvious over U.S. Patent Publication No. 2003/0235449 (Ahn), Applicants have amended claim 1, and submit that claims 1-6, 8, 9 and 22 are now in condition for allowance.

Ahn discloses a driving apparatus and method for double-side printable machine (Figs. 1-3) including a fixing unit 40 (paragraph 64). A power transfer/cutoff part 162 is constructed with a latch gear meshed with second driving motor 157a to transfer the power when second driving motor 157a is clockwise rotated and to cut off the power when second driving motor 157a is counterclockwise rotated. The latch gear of power transfer/cutoff part 162 is meshed with a first paper discharge roller gear 151a through a second paper discharge roller idle gear 153, meshed with a second paper discharge roller gear 155a through second and third paper discharge idle gears 153 and 154, and meshed with a fixing roller gear 141a through first and second fixing roller idle gears 163 and 164. The controller controls the first driving motor 115a and first driving part 115 to stop driving when a rear end of sheet P passes through developing unit 30 (paragraphs 73 and 74). As second driving motor 157a is counterclockwise driven, the third paper discharge roller 60 is clockwise rotated by the third paper discharge roller gear 160a. Accordingly, first sheet P enters the paper return path B and is conveyed toward first reverse-transport roller 70. At this time second driving motor 157a is driven at a speed of 1.5~2 times higher than that of first driving motor 115a in order to increase double-side printing efficiency. At this time latch gear cutting off power transfer is installed between fixing roller 41, first and second paper discharge rollers 51 and 55 and second driving motor 157a to prevent an overload

from being transferred to fixing unit 40 as the driving speed of second driving motor 157a increases so that the counterclockwise rotation force of second driving motor 157a is not transferred to fixing roller 41 and first and second paper discharge rollers 51 and 55 (paragraphs 98 and 99).

In contrast claim 1 as amended, recites in part:

> operating the motor at a speed greater than the first process speed to drive the hot roll for a time while the media is being routed back to the nip formed between the hot roll and the backup roll.

(Emphasis added). Applicants submit that such an invention is neither taught, disclosed nor suggested by Ahn or any of the other cited references, alone or in combination and includes distinct advantages thereover.

Ahn discloses a driving apparatus method for a double-side printable machine including a driving motor 157a that is disengaged from the fixing rollers when operated in a counterclockwise direction. Motor 157a is driven at a speed of 1.5-2 times while it is in a counterclockwise rotation, which is when the fixing rolls are disengaged. In contrast, Applicants' invention rotates the hot roll and backup roll at a higher than normal process speed when the media is apart from the fuser unit, such as in an imaging portion of the device. Ahn does not disclose the higher speed rotation of the hot roll and backup roll while the paper is receiving an image on a second side. Therefore, Ahn and any of the other cited references, alone or in combination fail to disclose, teach or suggest the step of operating the motor at a speed greater than the first process speed for a time to drive the hot roll while the media is being routed back to the nip formed between the hot roll and the backup roll, as recited in claim 1.

An advantage of Applicants' invention is that hot and cold spots may form, particularly outside of the nipped area, which are substantially reduced or eliminated by the present invention. This results in improved print quality and improved gloss uniformity on the final image. Yet

another advantage of the present invention, is that it allows a higher output performance and print quality in a compact design and reduced manufacturing cost. For the foregoing reasons, Applicants submit that claim 1, and claims 2-6, 8, 9 and 22 depending therefrom, are now in condition for allowance, which is hereby respectfully requested.

Claim 7 has been rejected under 35 U.S.C. § 103(a) as being unpatentable over Ahn in view of U.S. Patent No. 5,659,846 (Yoshioka). However, claim 7 depends from claim 1, and claim 1 is now in condition for allowance for the reasons given above. Accordingly, Applicants submit that claim 7 is now in condition for allowance, which is hereby respectfully requested.

Claims 10 and 11 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over Ahn in view of U.S. Patent Application Publication No. US2004/0037601. However, claims 10 and 11 depend from claim 1, and claim 1 is now in condition for allowance for the reasons given above. Accordingly, Applicants submit that claims 10 and 11 are now in condition for allowance, which is hereby respectfully requested.

Responsive to the rejection of claims 12-21 under 35 U.S.C. § 103(a) as being unpatentable over Ahn in view of U.S. Patent Application Publication No. 2003/0081962 (Murata), Applicants have amended claims 12 and 20 and submit that claims 12-21 are now in condition for allowance.

Murata discloses a fixing apparatus and image forming apparatus (Figs. 1 and 7-11), including a fixing roller 25 that has reached a predetermined temperature. When the predetermined temperature is reached and the temperature of press roller 26 is low, the rotational speed of rollers 25 and 26 is increased before sheet P reaches fixing apparatus 20 (paragraph 53). The rotational speed of rollers 25 and 26 is changed until sheet P reaches fixing apparatus 20 in accordance with the states of fixing roller 25 and press roller 26 with respect to the predetermined temperatures. In this manner rollers 25 and 26 can be set to the predetermined temperature at

which fixing is possible. When the temperature of both fixing roller 25 and press roller 26 are lower than the reference temperature, rollers 25 and 26 are rotated at an ordinary recording rotational speed to increase their temperatures (paragraphs 56 and 57). In the standby mode, when image fixing is not performed, the temperature of press roller 26, which is not in contact with an image to be fixed is detected. If the temperature is not a predetermined value, fixing roller 25 is rotated intermittently to maintain the temperature of press roller 26 at a certain constant level, as shown in Fig. 11 (paragraph 69). Temperature sensors 28 and 29 are located at one position relative to rollers 25 and 26 (Fig. 2).

In contrast, claim 12 as amended, recites in part:

> operating the motor at a speed greater than the first process speed to drive the hot roll after said resuming rotation step while the media is apart from the fuser unit

(Emphasis added). Applicants submit that such an invention is neither taught, disclosed nor suggested by Ahn, Murata, or any of the other cited references, alone or in combination includes distinct advantages thereover.

Ahn discloses a driving apparatus method for a double-side printable machine including a driving motor 157a that is disengaged from the fixing rollers when operated in a counterclockwise direction. Motor 157a is driven at a speed of 1.5-2 times while it is in a counterclockwise rotation, which is when the fixing rolls are disengaged. Murata discloses rollers that change speed until a sheet reaches the fixing apparatus in accordance with the state of the fixing roller and the press roller with respect to predetermined temperatures. The temperature sensors are located at one position relative to the rollers so presumably would provide only a spot temperature reading of the spot of the respective roller that is beneath the sensor. In contrast, Applicants' invention claims an operation of the motor at a greater speed than the process speed while the media is apart from the fuser unit. This is contrary to the teaching of the cited references, which drives the motor at a higher speed when the fusing rolls are disengaged, not while they are

engaged or is dependent on a measured temperature of a portion of the rolls. In Applicants' invention the resuming of the rotation of the hot roll and backup roll occurs while the media is in another portion of the printer, such as the imaging section. Applicants' invention reverses the direction of the hot roll and backup roll and only operates the fuser motor at a speed greater than the first process speed after the resuming rotation step and prior to the media being returned to the fuser unit, particularly the nip thereof. Therefore, Ahn, Murata and any of the other cited references, alone or in combination fail to disclose, teach or suggest a step of operating the motor at a speed greater than the first process speed to drive the hot roll after the resuming rotation step, while the media is apart from the fuser unit, as recited in claim 12.

An advantage of Applicants' invention is that hot and cold spots which may have formed, particularly outside of the nipped area, are substantially reduced or eliminated. This results in improved print quality and improved gloss uniformity on the final image. Yet another advantage is it allows a higher output performance and print quality in a compact design a reduced manufacturing cost. For the foregoing reasons, Applicants submit that claim 12, and claims 13-19 depending therefrom, are now in condition for allowance, which is hereby respectfully requested.

In further contrast, claim 20 as amended, recites in part:

> disengaging the hot roll from the drive train after fusing an image on a first side of the media;
>
> re-engaging the hot roll with the drive train before advancing the media between the hot roll and the backup roll for fusing an image on a second side of the media; and
>
> operating the motor at a speed greater than the first process speed to drive the hot roll after said step of re-engaging the hot roll with the drive train and before the media returns to the fuser unit.

(Emphasis added). Applicants submit that such an invention is neither taught, disclosed nor suggested by Ahn, Murata, or any of the other cited references, alone or in combination and includes distinct advantages thereover.

Ahn discloses a driving apparatus method for a double-side printable machine including a driving motor 157a that is disengaged from the fixing rollers when operated in a counterclockwise direction. Motor 157a is driven at a speed of 1.5-2 times while it is in a counterclockwise rotation, which is when the fixing rolls are disengaged. Murata discloses rollers that change speed until a sheet reaches the fixing apparatus in accordance with the states of fixing roller in the press roller with respect to predetermined temperatures. In contrast, Applicants' invention claims an operation of the motor at a greater speed than the process speed while the media is apart from the fuser unit. This is contrary to the teaching of Ahn, which drives the motor at a higher speed when the rolls are disengaged, not while they are engaged. In Applicants' invention the resuming of the rotation of the hot roll and backup roll occurs while the media is in another portion of the printer, such as the imaging section. Applicants' invention distinctly reverses the direction of the hot roll and backup roll and only operates the fuser motor at a speed greater than the first process speed after the resuming rotation step and prior to the media being returned to the fuser unit, particularly the nip thereof. Therefore, Ahn, Murata and any of the other cited references, alone or in combination fail to disclose, teach or suggest the steps of disengaging the hot roll from the drive train after fusing an image on a first side of the media, re-engaging the hot roll with the drive train before advancing the media between the hot roll and the backup roll for fusing an image on a second side of the media and operating the motor at a speed greater than the first process speed to drive the hot roll after the step of re-engaging the hot roll with the drive train and before the media returns to the fuser unit, as recited in claim 20.

An advantage of Applicants' invention is that hot and cold spots which may have formed, particularly outside of the nipped area, are substantially reduced or eliminated. This results in improved print quality and improved gloss uniformity on the final image. Yet another advantage is it allows a higher output performance and print quality in a compact design and a reduced

manufacturing cost. For the foregoing reasons, Applicants submit that claim 20, and claim 21 depending therefrom, are now in condition for allowance, which is hereby respectfully requested.

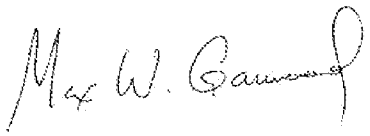
As a note of clarification to the Examiner, in the first paragraph on page 5 of the Office Action, reference is made to a fuser in a two-image mode. Two-image mode, as used by the Applicants, refers to having two pieces of media in the media path at the same time (see page 10, lines 3-8 of the specification). However, Ahn refers to double-sided printing of a single page and discloses only one piece of media in the media path at any one time, which is not a two-image mode.

For the foregoing reasons, Applicants submit that no combination of the cited references teaches, discloses or suggests the subject matter of the amended claims. The pending claims are therefore in condition for allowance, and Applicants respectfully request withdrawal of all rejections and allowance of the claims.

In the event Applicants have overlooked the need for an extension of time, an additional extension of time, payment of fee, or additional payment of fee, Applicants hereby conditionally petition therefor and authorizes that any charges be made to Deposit Account No. 20-0095, TAYLOR & AUST, P.C.

Should any question concerning any of the foregoing arise, the Examiner is invited to telephone the undersigned at (260) 897-3400.

Respectfully submitted,



Max W. Garwood
Registration No. 47,589

Attorney for Applicant

MWG/dc/bd

Filed electronically October 31, 2006

TAYLOR & AUST, P.C.
142 S. Main Street
P.O. Box 560
Avilla, IN 46710
Telephone: 260-897-3400
Facsimile: 260-897-9300